

Badiu et al., in the English abstract thereof, states that "[g]ermination of sugar-beet seeds is increased and their dormancy reduced by the following treatment: (a) the seeds are immersed for 6-8 hrs in a vat containing a continuous potable water current of 0.25-0.50 m/s inlet flow velocity and of 15-18 deg. C; (b) the seeds are then dried in a current of warm air at 30-35 deg. C until their moisture content is at 14% . . .".

Smith discloses that grain legumes which are soaked in certain types of water environments may be damaged, such by experiencing imbibition damage or decreased germination capacity, specifically, "[i]mbibition damage . . . was observed when seeds [are] soaked in water". Smith further states "[w]here soaking reduced germination, seed drying after soaking resulted in increased germination capacity".

Evans et al., in the section thereof with the heading "Light" as applied by the Examiner, generally teaches that some seeds require light for germination, other seeds germinate best in the dark, and still other seeds germinate in either light or dark conditions.

Independent Claim 1 calls for a method of preventing defective germination or rosette formation of a plant seed, including the steps of leaving the plant seed to stand in a highly watery condition at a low temperature in a dark place; and drying the plant seed immediately after leaving the plant seed to stand in the highly watery condition at the low temperature in a dark place, before the seed becomes active.

Applicant respectfully submits that independent Claim 1 cannot be obvious over Badiu et al. in view of Smith because the foregoing references, either alone or in combination, fail to disclose each and every limitation of independent Claim 1. Specifically, neither Badiu et al. nor Smith disclose the claimed step of leaving a plant seed to stand in a highly watery condition at a low temperature *in a dark place*. Badiu et al. is totally silent as to whether its disclosed water immersion is carried out in a light or dark place, and therefore does not teach leaving a plant seed to stand in a highly watery condition in a dark place, as called for in independent Claim 1. Similarly, Smith is also totally silent as to whether its disclosed soaking of seeds in water is carried out in a light or dark place, and therefore also does not teach leaving seeds in a highly watery condition in a dark place, as called for in independent Claim 1.

Further, Applicant submits that one of ordinary skill would not combine the disclosures of Badiu et al. and Smith in the manner relied upon by the Examiner. Smith

teaches that when seeds are damaged by soaking, causing reduced germination capacity, the reduced germination capacity may be increased, i.e. partially restored, by drying the seeds. Specifically, Smith states "[w]here soaking reduced germination, seed drying after soaking resulted in increased germination capacity" (italics added). Thus, one of ordinary skill in the art would not understand Smith to teach seed drying as a step which should follow seed soaking. Rather, one of ordinary skill in the art would understand Smith to teach seed drying only in the context of a regenerative process for seeds whose germination capacity is damaged by soaking.

In fact, one of ordinary skill in the art would understand Smith to generally teach against soaking seeds, which Smith discloses as causing imbibition damage and/or reduced germination capacity. Thus, one of ordinary skill in the art would not combine the teachings of Badiu et al. and Smith to arrive at the method claimed in independent Claim 1, and Applicant respectfully disagrees with the Examiner's reasoning that "Smith teaches that drying seed after soaking results in increased germination capacity . . ." such that "[i]t would have been obvious to one of ordinary skill in the art to follow the method steps of Badiu et al. to achieve the old and well-known result of improved germination as taught by Smith."

For the foregoing reasons, Applicant respectfully submits that independent Claim 1 is not obvious over Badiu et al. and Smith, either alone or in combination.

Claim 2 depends from independent Claim 1, and calls for drying the plant seed in insufficient light to cause the seed to germinate. Claim 3 depends from Claim 2, and calls for drying the seed in a dark place.

With respect to Claims 2 and 3, the addition of Evans et al. does not correct the underlying deficiencies of Badiu et al. Specifically, Badiu et al. and Evans et al., either alone or in combination, fail to disclose leaving a plant seed to stand in a highly watery condition at a low temperature *in a dark place*, as called for in independent Claim 1, from which Claims 2 and 3 depend. Further, Badiu et al. and Evans et al. also fail to disclose drying plant seeds in insufficient light to cause the seed to germinate, or drying plant seeds in a dark place, as called for in Claims 2 and 3, respectively.

Also, one of ordinary skill in the art would not combine Badiu et al. and Evans et al. in the manner relied upon by the Examiner. Evans et al. only teaches in a general manner that some plant seeds require light for germination, others germinate best in the dark, and that

others germinate in either light or dark. One of ordinary skill in the art, without knowledge of Applicant's claimed invention, would thus understand Evans et al. as teaching the effect of light, darkness, or a combination of the foregoing on seed germination *while the seeds are germinating*. Evans et al. does not disclose soaking seeds, or drying seeds following such soaking, and therefore is silent as to the effect of light (or darkness) on seeds during drying of the seeds. As noted above, Badiu et al. is silent as to whether seeds are soaked and dried in light or dark conditions in the process disclosed therein. For the foregoing reasons, Applicant respectfully submits that Claims 2 and 3 are not obvious over Badiu et al. and Evans et al., either alone or in combination.

The Examiner further rejected Claim 1 under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,107,051 to Job et al. (hereinafter "Job et al. '051") in view of Smith. The Examiner further rejected Claims 2 and 3 as being obvious over U.S. Patent No. 6,107,051 to Job et al. in view of Evans et al. The disclosures of Smith and Evans et al. are discussed above.

Job et al. '051 discloses using a protein, which is induced in the course of the soaking of mature seeds of plants belonging to certain disclosed species, as a molecular marker for a seed soaking process. Job et al. '051 discloses several forms of "hydroconditioning" in which seeds are soaked at different temperatures and at different time periods.

Applicant respectfully submits that independent Claim 1 is not obvious over Job et al. '051 and Smith because the foregoing references, either alone or in combination, fail to disclose the criticality of drying the plant seed immediately after leaving the plant seed to stand in a highly watery condition at a low temperature in a dark place, before the seed becomes active, as called for in independent Claim 1. While Job et al. '051 generally teaches drying seeds after hydroconditioning, Job et al. '051 does not teach or suggest that such drying need take place immediately after such hydroconditioning. By contrast, Applicant has discovered that when seeds are allowed to stand in a highly watery condition at a low temperature in a dark place and are then immediately dried, the germination rate of the seeds is increased, as demonstrated in the Examples at Pages 6-11 of the present patent application. In the present patent application, the importance of the drying the seeds immediately after standing same in the highly watery condition is emphasized (Page 5, third paragraph):

Preferably, the drying treatment is carried out right after leaving the seed to stand in [a] highly watery condition at low temperature in a dark place. Furthermore, preferably the drying treatment itself is carried out as quickly as possible.

Also, Applicant respectfully disagrees with the Examiner's reasoning as to why one of ordinary skill in the art would combine the disclosures of Job et al. '051 and Smith. The Examiner stated that "Smith teaches that drying seed after soaking results in increased germination capacity . . . [i]t would have been obvious to one of ordinary skill in the art to follow the method steps of Job et al to achieve the old and well-known result of improved germination as taught by Smith." On the contrary, as discussed above, one of ordinary skill in the art would not understand Smith to teach seed drying as a step which usually follows seed soaking; rather, one of ordinary skill in the art would understand Smith to teach seed drying only in the context of a regenerative process for seeds which whose germination capacity is in fact damaged by soaking. Thus, one of ordinary skill in the art would not combine the teachings of Job et al. '051 and Smith to arrive at the method claimed in independent Claim 1.

With respect to Claims 2 and 3, the addition of Evans et al. does not correct the underlying deficiencies of Job et al. '051. Specifically, Job et al. '051 and Evans et al., either alone or in combination, fail to disclose drying plant seeds in insufficient light to cause the seed to germinate, or drying plant seeds in a dark place, as called for in Claims 2 and 3, respectively.

Further, one of ordinary skill in the art would not combine Job et al. '051 and Evans et al. in the manner relied upon by the Examiner. As set forth above, Evans et al. only teaches in a general manner that some plant seeds require light for germination, others germinate best in the dark, and that others germinate in either light or dark. One of ordinary skill in the art, without knowledge of Applicant's claimed invention, would thus understand Evans et al. as teaching the effect of light, darkness, or a combination of the foregoing to seed germination *while the seeds are germinating*. Evans et al. does not disclose soaking seeds, or drying seeds following such soaking, and therefore is silent as to the effect of light (or darkness) on seeds during drying of the seeds. Therefore, Evans et al. contains no teaching or suggestion as to the effect of light on seeds during drying of the seeds, and Job et al. '051 is totally silent as to whether seeds are dried in light or dark conditions. For the foregoing reasons, Applicant